	2nd generation DES	1st generation DES	BMS	p-value
Diabetes mellitus	57(53.3%)	68(48.9%)	19(36.5%)	0.14
ACS presentation	56(52.8%)	81(58.3%)	28(53.9%)	0.67
Duration from stent implantation (yrs)	1.1±0.8	3.3±2.1	5.8±5.6	<0.001
Total stent length (mm)	32.2±18.7	29.4±16.1	21.8±13.5	0.001
Average reference lumen area (mm2)	6.4±1.9	6.3±1.8	6.3±2.3	0.99
Minimum lumen area (MLA) (mm2)	2.6±0.7	2.5±0.8	2.7±0.7	0.25
Minimum stent area (MSA)	4.7±1.6	4.9±1.6	6.4±2.2	<0.001
MSA <5mm2	69.2%	56.8%	28.8%	<0.001
%NIH at MLA site	52.3±16.9	56.1±16.0	60.9±12.8	0.006
Diffuse ISR	28.0%	30.2%	28.8%	0.01
Stent fracture, n (%)	8.3%	5.8%	0.0%	0.10
Stent malapposition, n (%)	10.3%	10.1%	7.7%	0.86

Conclusions: Although the mechanisms of restenosis seem to be similar between 1st and 2nd generation DES, restenotic DES were characterized by more co-existent mechanical complications (underexpansion and strut fracture) and less neointimal hyperplasia than restenotic BMS.

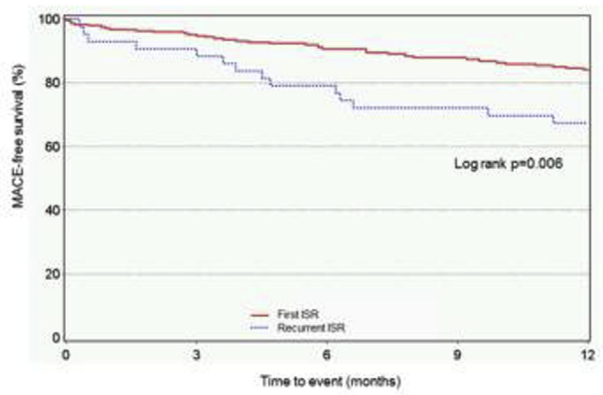
TCT-659

Clinical Outcomes of Patients Presented with Sirolimus-eluting Stent Failure and Treated with Additional Drug-eluting Stent

Hideaki Ota[1], Marco A. Magalhaes[1], lakshmana Pendyala[1], Thibault Lhermusier[1], Sa'ar Minha[1], Nevin C. Baker[1], Ricardo O. Escarcega[1], Wenjie Tian[1], Rebecca Torguson[1], Fang Chen[1], Lowell F. Satler[1], William O. Suddath[1], Augusto Pichard[1], Ron Waksman[1]
[1]MedStar Washington Hospital Center, Washington, DC

Background: Additional placement of limus stents (Sirolimus-eluting stent [SES] or Everolimus-eluting stents [EES]) for the treatment of in-stent restenosis of SES (SES-ISR) has been a matter of controversy. This prompted us to assess the clinical outcomes of additional limus-stent in patients presenting with SES-ISR comparing with balloon angioplasty (BA).
Methods: Enrollment included patients with SES-ISR undergoing repeat target lesion revascularization (TLR). The patients were grouped according to treatment into EES, SES and BA groups. The end points were a comparison of major adverse cardiac events (MACE) composed by all-cause mortality, myocardial infarction and TLR, as well as incidence of definite stent thrombosis (ST).
Results: Overall, 310 patients with SES-ISR were treated with [EES (n=43), SES (n=102) and BA (n=165)]. The baseline characteristics were similar among the 3 groups. The incidence of 1-year MACE was similar among the 3 groups (14.6%, 18%, 20%; respectively; p=0.72). The incidence of ST was 0% in all the groups. When the restenotic lesions were classified into the first ISR versus recurrent ISR, MACE-free rate for recurrent ISR was significantly lower when compared with the first ISR for the entire cohort. (67.4% vs 83.8%; p=0.006) (Figure). This was also observed in the limus-stent treatment group (66.7% vs 85.5%; p=0.029).

Figure: Kaplan-Meier curve of cumulative MACE-free survival according to the number of restenotic events for SES-ISR for the entire cohort.



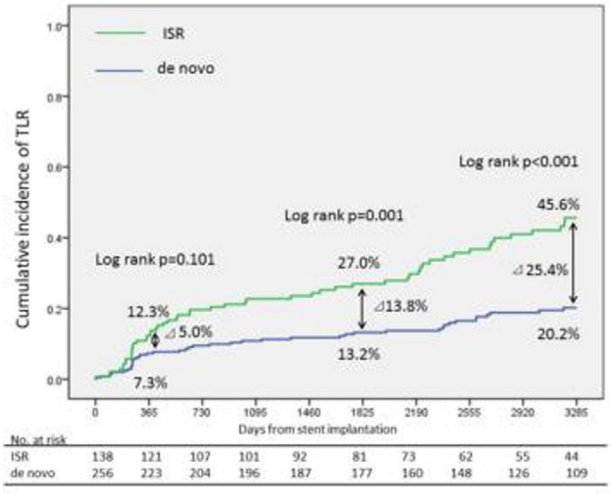
Conclusions: The outcome of patients treated for SES-ISR is similar among first- or second-generation DES and BA. Patients with recurrent ISR are doing poorly even with second-generation limus-stent.

TCT-660

Nine-year Clinical Outcomes After The First Sirolimus-eluting Stent Implantation: Impact Of In-stent Restenosis Lesion

Hiroshi Miyawaki[1], Kazushige Kadota[1], Takeshi Tada[1], Shunsuke Kubo[1], Seiji Habara[1], Hiroyuki Tanaka[1], Tsuyoshi Goto[1], Kazuaki Mitsudo[1]
[1]Kurashiki Central Hospital, Kurashiki, Japan

Background: Little is known about the effect of sirolimus-eluting stent (SES) implantation in in-stent restenosis (ISR) lesion more than five years. We aimed to compare the clinical outcomes up to nine years after the first SES implantation between in ISR lesion and in de novo lesion.
Methods: A total of 395 patients underwent the first SES implantation between November 2002 and December 2004. There were 139 patients for ISR lesion and 256 patients for de novo lesion. We evaluated stent thrombosis (ST) and target lesion revascularization (TLR) from the SES implantation to five years and beyond five years. ST was defined definite ST according to the Academic Research Consortium definition.
Results: Complete nine-year follow-up was achieved in 91.9% (363/395). The cumulative incidences of nine-year ST were 5.6% in the ISR group and 2.3% in the de novo group (p=0.17): TLR, 45.6% and 20.2% (p< 0.001) respectively. As the figure shows, the TLR rate in ISR group was significantly higher than in de novo group through nine years, and the difference of the TLR rate in two groups increased in this period.



Conclusions: The incidence of TLR after the SES implantation in ISR lesion was significantly higher than that in de novo lesion and the difference of the TLR rate between in two lesions became more clear through nine years, although the incidence of ST had no significant difference in two lesions.

TCT-661

Vascular Brachytherapy versus Drug-Eluting Stents in the Treatment of In-Stent Restenosis: a Meta-Analysis of Long Term Outcomes

Rhanderson N. Cardoso[1], Alexandre M. Benjo[2], Tyrone Collins[2], Daniel Garcia[1], Francisco Y. Macedo[3], Georges EL-Hayek[4], Carlos Zamora[5], Emad Aziz[4], James S. Jenkins[2]
[1]University of Miami Miller School of Medicine, Miami, FL, [2]Ochsner Medical Center, New Orleans, LA, [3]Baylor College of Medicine, Houston, TX, [4]St Luke's Rosevelt Hospital Center, New York, NY, [5]Mount Sinai Medical Center, Miami, FL

Background: Clinical trials have shown a short term benefit of drug eluting stents (DES) compared to vascular brachytherapy (VBT) for the treatment of in-stent restenosis (ISR). The long term benefits of DES vs. VBT are conflicting in the literature. This study aimed to do a meta-analysis of long term outcomes of DES compared to VBT for treatment of ISR.
Methods: PubMed, EMBASE, Cochrane Central and unpublished data were searched for cohort studies and randomized controlled trials (RCTs) that directly compared VBT to DES for the treatment of ISR. We evaluated outcomes at 2 to 5 years of follow up. Random-effects model was used for calculation of odds ratio (OR).
Results: We included 1,364 patients from 5 studies, of which 3 were RCTs. VBT was used to treat ISR in 677 (49.6%) patients. After a 2 to 5 year follow up, no significant difference was found between treatment groups regarding myocardial infarction (p=0.50), stent thrombosis (p=0.88), cardiovascular mortality (p=0.35) and overall mortality (p=0.72). Target lesion revascularization (TLR; OR 2.39; CI 1.56-3.68; p< 0.001) and target vessel revascularization (TVR; OR 2.27; CI 1.02-5.21; p=0.04) were significantly increased in patients who received VBT. As illustrated in figure 1, subanalysis including only RCTs showed consistent long-term benefit of DES over VBT for TLR (p=0.01) and TVR (p=0.04).